

Federal Emission Requirements SEMA 2008

United States Environmental Protection
Agency

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Outline

- EPA Mobile Source Enforcement
- The Clean Air Act
- Defeat Devices
- Tampering (and Memo 1A)
- Voluntary Aftermarket Parts Certification
- Other Policies and Guidance
- Exemptions
- Inspection Maintenance Programs
- California's Special Status
- FAQs
- Web Links

EPA's Air Enforcement Program

- EPA is an Executive Agency that protects the environment.
- EPA is composed of a Washington DC Headquarters office and 10 Regional offices and employs over 18,000 people.
- EPA is organized into media programs (air, water, etc.) and enforcement.
- EPA Air Enforcement Division includes both stationary and mobile source enforcement.
- EPA Air Enforcement Division works closely with EPA's National Vehicle Fuel and Emissions Laboratory in Ann Arbor, MI.

EPA Mobile Source Enforcement

- Mobile source enforcement includes on-road, off-road (nonroad) and fuels.
- EPA's Vehicle and Engine Enforcement Team is responsible for nationwide enforcement of the non-fuel related provisions of Title II of the Clean Air Act, including provisions related to certification, importation, and tampering.

The Clean Air Act

- The Clean Air Act (CAA) was enacted by Congress in 1970, and amended in 1977 and 1990.
- Title II of the CAA – Mobile Source Provisions
 - On-highway and nonroad vehicles and engines are regulated
 - Today's presentation limited to motor vehicles.
- Title II Section 203 of the CAA contains the following prohibitions (among others) for which EPA may seek injunctive relief (remedy) and a penalty.

CAA Title II Prohibitions: Defeat Devices

- CAA Section 203(a)(3)(B), 42 U.S.C. §7522(a)(3)(B): The following acts and the causing thereof are prohibited –
 - To manufacture or sell, or offer to sell, or install, a part for a motor vehicle, where
 - A principle effect of the part or component is to bypass, defeat, or render inoperative any emission control device, and
 - The person knows or should know that such part or component is being offered for sale or installed for such use or put to such use.

Defeat Devices: Who is Liable and what are the Penalties? (CAA Section 205)

- Maximum penalties for sale or installation of defeat devices are \$32,500 per violation for any person or company.
- Each individual sale or installation of a unit that is a defeat device constitutes a separate violation.
- Individuals, dealers, and manufacturers are liable for:
 - Sale or installation, or
 - ***Causing*** the sale or installation.
- Claims of “off-road use” or “racing only” do not protect the seller from liability under the CAA.

Defeat Device Example: O2 Simulators

- Device that modifies or replaces the signal from the Rear oxygen sensor to the OBD system.
- 2007 Enforcement Case – Casper's Electronics
 - \$74,000 civil penalty, and
 - Recall of O2Sims.

Defeat Device Example: Advanced Fuel Injection Timing

- Computer software that alters diesel fuel injection timing under conditions not substantially represented by the Federal Test Procedure (FTP) is a defeat device.
- 1998 Enforcement Case - Diesel Engine Consent Decrees with Caterpillar, Cummins, Detroit Diesel, Mack, Volvo, Renault, and International (Navistar)
 - Combined civil penalty of more than \$83 million, and
 - Compliance measures in excess of \$1 billion

Other Examples of Defeat Devices

A component or computer code that:

- Causes enrichment for increased power where the code does not activate fully during the FTP, or
- Senses test conditions and changes fuel injection timing when the vehicle is operating off the test cycle, or
- Interferes with the function of the on-board diagnostic system.

Auxiliary Emission Control Device (AECD)

- AECD is defined as (See 40 C.F.R. 86.082-2 and 86.094-2):

Any element of design that senses temperature, vehicle speed, engine rpm, transmission gear, manifold vacuum, or any other parameter for the purpose of activating, deactivating, or modulating the operation of any part of the emission control system.

Defeat Device Regulatory Definition

- EPA's regulations (see for example 40 C.F.R. Part 86.004-2) define a Defeat Device as:
 - An AECD that reduces the effectiveness of the emission control system during normal vehicle operation and use.
 - But there are some exceptions. An AECD is not a defeat device if:
 - It is substantially used during the FTP, or
 - It is necessary for engine starting, or warm-up, or protection.

Objective Screening Criteria for Heavy Duty Diesel Engine (HDDE) Defeat Devices

- EPA Guidance: VPCD 98-13 Heavy Duty Diesel Engines Controlled by Onboard Computers: Guidance on Reporting and Evaluating Auxiliary Emission Control Devices and the Defeat Device Prohibition of the Clean Air Act -- (issued 10/15/98)
 - Provides a good summary of past guidance on defeat devices for reference,
 - Outlines what must be included in a description of AECDs in order for EPA to evaluate whether the AECD is a defeat device, and
 - Provides objective screening criteria to be used by EPA to determine whether to further scrutinize certain AECDs as defeat devices.

EPA may deny approval for HDDE AECDs that protect a frail engine

- Advisory Circular 24-3 Implementation of Requirements Prohibiting Defeat Devices for On-Highway Heavy-duty Diesel Engines – (issued 1/19/01)
- Clarifies that EPA will not approve AECDs for engine protection where the engine design is “frail”
 - “If an AECD is expected to cause an excessive increase in any regulated pollutant, EPA will consider whether design alternatives are available which would make the engine/emission control system less susceptible to the need for an AECD that increases emissions to the extent of the proposed AECD.”

EPA Policy: Defeat Devices on Light Duty Vehicles (<8500 GVWR)

- Advisory Circular 24- Prohibition of Use of Emission Control Defeat Devices -- (issued 2/11/72)

Defines defeat devices as elements of design that adversely affect emissions during normal vehicle operation but that do not operate during normal FTP test conditions.
- Advisory Circular 24-2 Prohibition of Emission Control Defeat Devices - Optional Objective Criteria -- (issued 12/6/78)

Clarifies that electronic control strategies can be defeat devices. Also, this guidance provides a screening criteria for defeat devices. If NO_x on the highway fuel economy test is less than 1.22 times the FTP NO_x standard for cars or 1.28 times the FTP NO_x standard for light trucks, then EPA will determine that the vehicle does not contain a defeat device.

CAA Title II Prohibitions: Tampering

- CAA Section 203(a)(3)(A), 42 U.S.C. §7522(a)(3)(A): The following acts and the causing thereof are prohibited –
 - For anyone to remove or render inoperative an emission control component on a certified motor vehicle prior to sale or delivery to ultimate purchaser, or
 - For anyone to knowingly remove or render inoperative any emission control component on a certified vehicle or engine after sale and delivery to the ultimate purchaser.

Tampering: Who is Liable and what are the Penalties? (CAA Section 205)

- Maximum penalties for tampering:
 - Individual: \$2750 per violation
 - Dealer or Manufacturer: \$32,500 per violation
- Each act of tampering on each vehicle is a separate violation.
- Individuals, dealers, and manufacturers are liable for tampering.
- Individuals, dealers, and manufacturers are also liable if they **cause** tampering.

Some examples of Tampering Violations

- The tampering prohibition covers:
 - Service adjustments to engines that do not conform with original specifications,
 - Installation of parts that are not built to original manufacturer (OEM) specifications, and
 - Installation of “add-on” parts that were not part of the original certified design.

Memo 1A (Tampering Enforcement Policy)

- Interim Tampering Enforcement Policy
Memorandum 1A- (6/25/74) – (Memo 1A)
- Memo 1A allows the sale and use of aftermarket parts when an individual or company has a “reasonable basis” to believe their actions do not cause emission problems.

Memo 1A (Continued)

- EPA issues no approvals under Memo 1A.
- Reasonable Basis is defined as:
 - No increase in emissions for equivalent, but non-OEM parts, or
 - Vehicles or Engines still meet the emissions standards when tested on the Federal Test Procedure (FTP) for add-on parts or out-of-spec adjustments.

Memo 1A Requirements

- In order to protect yourself from a charge of tampering if you install non-equivalent aftermarket parts, you should have in your records:
 - Emission test results from tests conducted in accordance with EPA's federal test procedure (FTP) using the correct test cycle showing that essentially similar vehicles meet the standards for the remainder of the vehicles' useful lives using your device *or*
 - An EPA Aftermarket Parts Certificate issued for the same part and covering the same vehicles on which you install the device.
 - Generally, the testing required for a CARB EO is the same as the testing required under Memo 1A because the test procedures are essentially the same.

Voluntary Certification of Aftermarket Parts (40 C.F.R. Part 85.2112-2123)

- Parts for Light duty vehicles and light duty trucks only.
- Parts Manufacturer must be able to demonstrate that:
 - The part maintains the vehicle's emission compliance over the full useful life of the vehicle,
 - The part does not alter the operation of or render inoperative any emission related component on the vehicle other than the one it is replacing (so, it can't be a defeat device), and
 - The part does not alter the functioning of the on-board diagnostic system.
- Certified aftermarket parts must be warranted for the lesser of the remaining performance warranty of the vehicle, or the warranty period of an equivalent OEM part.

EPA Aftermarket Catalytic Converter Policy (AMCC Policy)

- “Sale and Use of Aftermarket Catalytic Converters”, published on August 5, 1986.
- AMCC policy allows the sale and installation of new non-original equipment manufacturer (OEM) design catalytic converters under the following circumstances:
 - The catalytic converters are tested to meet the policy guidelines, and
 - The catalytic converters are installed only in limited circumstances:

AMCC Policy Requirements

- You can only install an AMCC meeting the policy requirements if:
 - Catalytic converter missing from the vehicle when brought in for repair; or
 - State or local inspection program has determined the existing catalytic converter has been lead poisoned, damaged, or otherwise needs replacement; or
 - Vehicle meets the age and mileage requirements and a legitimate need for replacement has been established and appropriately documented (e.g., a plugged catalytic converter or un-repairable exhaust leaks).

AMCC Policy Requirements (Cont.)

- Age and mileage limits for installation of AMCCs (unless the converter is missing or a State or local inspection program has determined the existing catalytic converter has been lead poisoned, damaged, or otherwise needs replacement):
 - > 5 years old or > 50,000 miles for pre-1995 vehicles, or
 - > 8 years or >80,000 miles for newer vehicles.

EPA Kit Car Policy (7/8/94)

- The Kit Car Policy describes the circumstances under which body modifications to vehicles will not be considered to be tampering because the vehicle is considered to be rebuilt and not newly manufactured.
- The Kit Car Policy also states that attempts to import disassembled or partially disassembled cars as parts is illegal unless the vehicle is certified.
- Vehicles not meeting the definition of Rebuilt Vehicle instead meet the definition of New Motor Vehicle and must be certified.

What is a Rebuilt Vehicle under the Kit Car Policy?

- Used or rebuilt engine, transmission, differential,
- Emission controls and settings identical to a certified configuration,
- Added weight \leq 500 pounds more than original certified vehicle,
- All catalytic converters, oxygen sensors, and charcoal canisters are new, original equipment parts,
- Same transmission configuration and vehicle-speed to engine-speed ratio ($\pm 3\%$ in every gear) as originally certified configuration,
- Labeling that includes make, model year, engine family, subfamily, and tune-up specifications of original certified vehicle, and
- Fuel filler neck restrictors and unleaded fuel labels which meet the requirements of 40 CFR 80.24, if applicable.

EPA Engine Switching Policy

- Engine Switching Fact Sheet – (issued 3/13/91)
 - Tampering to replace the engine in a vehicle (repower) with a non-identical engine.
 - With this policy, EPA permits non-identical repowers if the resulting vehicle is identical to a certified configuration.
 - Unless the original vehicle was certified to both a gasoline and diesel configuration, you cannot repower a gasoline vehicle with a diesel engine.
 - You also may not repower a light duty vehicle with a heavy duty engine.
 - You may repower an older heavy duty vehicle with an engine that is identical to a certified configuration of a heavy-duty engine of the same model year or newer as the year of the installed engine.

EPA Fact Sheet: Exhaust System

Repair Guidelines — (issued 3/13/91)

- Useful information regarding what actions related to work on exhaust systems are violations of the tampering provisions of the Clean Air Act, such as:
 - Removal of catalytic converters and installation of straight pipes on any certified vehicles, or
 - Any action other than the restoration of the exhaust system to the original certified configuration when working on the tampered system.

EPA Exemptions

- The CAA allows EPA, by regulation, to exempt some actions from the prohibitions of the CAA.
 - Some examples are racing exclusions, testing exemptions, or national security exemptions.
 - Each of these exemptions carries the requirement to obtain EPA approval.

Inspection and Maintenance (I/M) Programs

- There are currently 31 states with active I/M programs
- Program covers light-duty vehicles and trucks
 - 1996 and new vehicles receive an OBD scan
 - Inspectors check for several things
 - MIL status, Readiness, and Presence of DTCs
 - Issues with any one or more of these can lead to the vehicle being 'failed' and therefore not able to be registered
- Anything that may impact the ability of a program to receive accurate data in any of these areas is of significant concern to I/M program administrators
 - Includes OEM issues and any other modification that may have been made to the vehicle

Inspection and Maintenance Programs

- Primary concerns

- Are vehicles being appropriately being modified in accordance with Memo 1-A and/or CARB EO's
 - States and both agencies work together to determine if vehicles may have been subject to any form of tampering
- Customer satisfaction is also concern
 - A customer whose vehicle has been failed must remedy the issue
 - To the extent that a vehicle has been inappropriately modified, customers can face considerable expense and inconvenience in order to get their vehicle to pass inspection

California's Special Status

- CAA Section 209(b)(1), 42 U.S.C. §7543(b)(1)
No State may adopt or enforce any motor vehicle emission standard or require certification unless EPA waives this provision. EPA may approve a waiver only if:
 - The State had adopted standards for the control of vehicle exhaust emissions prior to March 30, 1966, and
 - The state standards are at least as restrictive as the Federal standards.
- California has been granted numerous waivers for its motor vehicle and nonroad exhaust emission standards, which typically are stricter than Federal standards.

On-Line References

- General EPA mobile source guidance: www.epa.gov/otaq
- EPA air enforcement guidance:
<http://cfpub.epa.gov/compliance/resources/policies/civil/caa/>
- Electronic Code of Federal Regulations (EPA is Title 40)
<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=%2Findex.tpl>
- Fact Sheet: Don't tamper with emission controls
<http://www.epa.gov/compliance/resources/policies/civil/caa/mobile/donttamper.pdf>
- Fact Sheet: Exhaust System Repair Guidelines
<http://www.epa.gov/compliance/resources/policies/civil/caa/mobile/exhsysrepair.pdf>
- Interim Tampering Enforcement Policy (Memo 1A)
<http://www.epa.gov/compliance/resources/policies/civil/caa/mobile/tamper-memo1a.pdf>
- EPA Kit Car Policy <http://www.epa.gov/otaq/imports/kitcar.htm>

On-Line References (Continued)

- VPCD 98-13 Heavy Duty Diesel Engines Controlled by Onboard Computers: Guidance on Reporting and Evaluating Auxiliary Emission Control Devices and the Defeat Device Prohibition of the Clean Air Act
http://www.epa.gov/dis/display_file.jsp?docid=14148&flag=1
- What You Should Know About Using, Installing, or Buying Aftermarket Catalytic Converters
<http://www.epa.gov/otaq/cert/factshts/catcvrts.pdf>
- Sale and Use of Aftermarket Catalytic Converters
<http://www.epa.gov/compliance/resources/policies/civil/caa/mobile/amccpolicy.pdf>
- EPA Advisory Circulars
http://www.epa.gov/dis/publist_gl.jsp?guideyear=All%20Years

Qs & As

- Q1: Is use of a non-approved aftermarket part tampering or installation of a defeat device?
 - A: It depends on what the part is. If the part is an “element of design” as defined by EPA (in other words, if it is a basic element of the emission control system, like the catalyst or the EGR), then using it could be tampering (unless the part is certified or otherwise qualifies under Memo 1A). If on the other hand, the part modulates or controls an element of the emission control system, such as altering how the computer controls the fuel, then it would be a defeat device. Also, the device could violate CAA Section 203(a)(3)(B), 42 U.S.C. §7522(a)(3)(B) even if it is not an AECD. An example would be a straight pipe that renders the catalytic converter inoperative because the converter is removed to install the straight pipe. The installer of the straight pipe violates both 203(a)(3)(A), 42 U.S.C. §7522(a)(3)(B) and 203(a)(3)(B), 42 U.S.C. §7522(a)(3)(B).

Qs & As

- Q2: Am I protected from selling a defeat device or tampering as long as I inform my customers that they can only use my parts “off-road” or “for racing use only” or that the parts are “not for installation on emission-controlled vehicles”?
 - A: No, if the parts are designed for and intended to be installed on motor vehicles, EPA considers you to still be liable under the CAA prohibited acts.

Qs & As

- Q3: Are California requirements any different from EPA's? I see a lot of advertisers who note that their parts are "49-state legal" or "not for sale in California".
 - A: As you have probably learned in this presentation, California requires an EO for emission-related parts sold in California. EPA considers parts to be legal if they have an EPA Aftermarket Parts Certificate, or otherwise qualify under Memo 1A. Usually, test data used to obtain a California EO can also qualify as test data supporting a reasonable basis under Memo 1A.